



☐ EPA/EPO/OEB
D-80298 München
☎ 089/2399-0
TX 523 656 apmu d
FAX 089/2399-4465

Europäisches
Patentamt

European
Patent Office

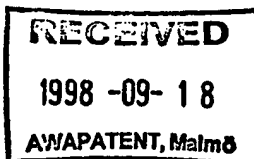
Office européen
des brevets

Generaldirektion 2

Directorate General 2

Direction Générale 2

Andersson, Per-Olof
AWAPATENT AB,
Box 5117
200 71 Malmö
SUEDE



Datum/Date
17.09.98

Nr./Ref./Réf. 2950767	Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°. 94915725.9-2303/0698162
Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire VÄLINGE ALUMINIUM AB	

TRANSMISSION OF THE CERTIFICATE FOR A EUROPEAN PATENT
PURSUANT TO RULE 54 (1) EPC

The certificate for a European patent, with the
specification annexed thereto, is enclosed herewith.

G. TERNIEDEN
Formalities Officer
Tel.No.: (+49-89) 2399-4440





**Europäisches
Patentamt**

**European
Patent Office**

**Office européen
des brevets**

Urkunde Certificate Certificat

Es wird hiermit bescheinigt, daß für die in der beigefügten Patentschrift beschriebene Erfindung ein europäisches Patent für die in der Patentschrift bezeichneten Vertragsstaaten erteilt worden ist.

It is hereby certified that a European patent has been granted in respect of the invention described in the annexed patent specification for the Contracting States designated in the specification.

Il est certifié qu'un brevet européen a été délivré pour l'invention décrite dans le fascicule de brevet ci-joint, pour les Etats contractants désignés dans le fascicule de brevet.

Europäisches Patent Nr.

European Patent No.

Brevet européen n°

0698162

Patentinhaber

Proprietor of the Patent

Titulaire du brevet

**VÄLINGE ALUMINIUM AB
Vangavägen 48
260 40 Viken/SE**

München, den
Munich,
Fait à Munich, le

16.09.98

EPA/EPO/OEB Form 2031 01.96

Ingo Kober

**Präsident des Europäischen Patentamts
President of the European Patent Office
Président de l'Office européen des brevets**



(19)

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 698 162 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
16.09.1998 Bulletin 1998/38

(51) Int Cl.⁶: **E04F 15/14, E04F 15/02,
E04F 13/08**

(21) Application number: **94915725.9**

(86) International application number:
PCT/SE94/00386

(22) Date of filing: **29.04.1994**

(87) International publication number:
WO 94/26999 (24.11.1994 Gazette 1994/26)

(54) **SYSTEM FOR JOINING BUILDING BOARDS**

VERBINDUNGSSYSTEM FÜR GEBÄUDEPLATTEN

SYSTEME D'ASSEMBLAGE DE PANNEAUX DE CONSTRUCTION

(84) Designated Contracting States:
**AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL
PT SE**

(72) Inventor: **PERVAN, Tony**
S-170 72 Solna (SE)

(30) Priority: **10.05.1993 SE 9301595**

(74) Representative: **Andersson, Per-Olof et al**
AWAPATENT AB,
Box 5117
200 71 Malmö (SE)

(43) Date of publication of application:
28.02.1996 Bulletin 1996/09

(60) Divisional application: **98106535.2 / 0 855 482**
98201655.4

(56) References cited:
WO-A-93/13280 **DE-A- 2 616 077**
FR-A- 1 293 043 **US-A- 3 538 665**

(73) Proprietor: **VÄLINGE ALUMINIUM AB**
260 40 Viken (SE)

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 0 698 162 B1

floors, e.g. with floor thicknesses of about 3 mm, since a joint based on a tongue-and-groove connection would not be sufficiently strong and practically impossible to produce for such thin floors. Nor are any other known joining techniques usable for such thin floors. Another reason why the making of thin floors from e.g. compact laminate involves problems is the thickness tolerances of the panels, being about 0.2-0.3 mm for a panel thickness of about 3 mm. A 3-mm compact laminate panel having such a thickness tolerance would have, if ground to uniform thickness on its rear side, an unsymmetrical design, entailing the risk of bulging. Moreover, if the panels have different thicknesses, this also means that the joint will be subjected to excessive load.

Nor is it possible to overcome the above-mentioned problems by using double-adhesive tape or the like on the undersides of the panels, since such a connection catches directly and does not allow for subsequent adjustment of the panels as is the case with ordinary gluing.

Using U-shaped clips of the type disclosed in the above-mentioned SE 450,141, or similar techniques, to overcome the drawbacks discussed above is no viable alternative either. Especially, biased clips of this type cannot be used for joining panels of such a small thickness as 3 mm. Normally, it is not possible to disassemble the floor panels without having access to their undersides. This known technology relying on clips suffers from the additional drawbacks:

- Subsequent adjustment of the panels in their longitudinal direction is a complicated operation in connection with laying, since the clips urge the panels tightly against each other.
- Floor laying using clips is time-consuming.
- This technique is usable only in those cases where the floor panels are resting on underlying joists with the clips placed therebetween. For thin floors to be laid on a continuous, flat supporting structure, such clips cannot be used.
- The floor panels can be joined together only at their long sides. No clip connection is provided on the short sides.

Technical Problems and Objects of the Invention

A main object of the invention therefore is to provide a system for joining together building panels, especially floor panels for hard, floating floors, which allows using floor panels of a smaller overall thickness than present-day floor panels.

A particular object of the invention is to provide a panel-joining system which

- makes it possible in a simple, cheap and rational way to provide a joint between floor panels without requiring the use of glue, especially a joint based primarily only on mechanical connections between

the panels;

- can be used for joining floor panels which have a smaller thickness than present-day laminated floors and which have, because of the use of a different core material, superior properties than present-day floors even at a thickness of 3 mm;
- makes it possible between thin floor panels to provide a joint that eliminates any unevennesses in the joint because of thickness tolerances of the panels;
- allows joining all the edges of the panels;
- reduces tool wear when manufacturing floor panels with hard surface layers;
- allows repeated disassembly and reassembly of a floor previously laid, without causing damage to the panels, while ensuring high laying quality;
- makes it possible to provide moisture-proof floors;
- makes it possible to obviate the need of accurate, separate placement of an underlay before laying the floor panels; and
- considerably cuts the time for joining the panels.

These and other objects of the invention are achieved by means of a panel-joining system having the features recited in the appended claims.

Thus, the invention provides a system for making a joint along adjacent joint edges of two building panels, especially floor panels, in which joint:

- the adjacent joint edges together form a first mechanical connection locking the joint edges to each other in a first direction at right angles to the principal plane of the panels, and
- a locking device arranged on the rear side of the panels forms a second mechanical connection locking the panels to each other in a second direction parallel to the principal plane and at right angles to the joint edges, said locking device comprising a locking groove which extends parallel to and spaced from the joint edge of one of said panels, termed groove panel, and which is open at the rear side of the groove panel, said system being characterised in
- that the locking device further comprises a strip integrated with the other of said panels, termed strip panel, said strip extending throughout substantially the entire length of the joint edge of the strip panel and being provided with a locking element projecting from the strip, such that when the panels are joined together, the strip projects on the rear side of the groove panel with its locking element received in the locking groove of the groove panel,
- that the panels, when joined together, can occupy a relative position in said second direction where a play exists between the locking groove and a locking surface on the locking element that is facing the joint edges and is operative in said second mechanical connection,
- that the first and the second mechanical connection

to form the first mechanical connection, the groove panel is angled down so as to accommodate the locking element in the locking groove.

Laying can also be performed by first placing both the strip panel and the groove panel flat on the subfloor and then joining the panels parallel to their principal planes while bending the strip downwards until the locking element snaps up into the locking groove. This laying technique enables in particular mechanical locking of both the short and long sides of the floor panels. For example, the long sides can be joined together by using the first laying technique with downward angling of the groove panel, while the short sides are subsequently joined together by displacing the groove panel in its longitudinal direction until its short side is pressed on and locked to the short side of an adjacent panel in the same row.

In connection with their manufacture, the floor panels can be provided with an underlay of e.g. floor board, foam or felt. The underlay should preferably cover the strip such that the joint between the underlays is offset in relation to the joint between the floor panels.

The above and other features and advantages of the invention will appear from the appended claims and the following description of embodiments of the invention.

The invention will now be described in more detail hereinbelow with reference to the accompanying drawing Figures.

Description of Drawing Figures

Figs 1a and 1b schematically show in two stages how two floor panels of different thickness are joined together in floating fashion according to a first embodiment of the invention.

Figs 2a-c show in three stages a method for mechanically joining two floor panels according to a second embodiment of the invention.

Figs 3a-c show in three stages another method for mechanically joining the floor panels of Figs 2a-c.

Figs 4a and 4b show a floor panel according to Figs 2a-c as seen from below and from above, respectively.

Fig. 5 illustrates in perspective a method for laying and joining floor panels according to a third embodiment of the invention.

Fig. 6 shows in perspective and from below a first variant for mounting a strip on a floor panel.

Fig. 7 shows in section a second variant for mounting a strip on a floor panel.

Description of Preferred Embodiments

Figs 1a and 1b, to which reference is now made, illustrate a first floor panel 1, hereinafter termed strip panel, and a second floor panel 2, hereinafter termed groove panel. The terms "strip panel" and "groove panel" are merely intended to facilitate the description of the

invention, the panels 1, 2 normally being identical in practice. The panels 1 and 2 may be made from compact laminate and may have a thickness of about 3 mm with a thickness tolerance of about ± 0.2 mm. Considering this thickness tolerance, the panels 1, 2 are illustrated with different thicknesses (Fig. 1b), the strip panel 1 having a maximum thickness (3.2 mm) and the groove panel 2 having a minimum thickness (2.8 mm).

To enable mechanical joining of the panels 1, 2 at opposing joint edges, generally designated 3 and 4, respectively, the panels are provided with grooves and strips as described in the following.

Reference is now made primarily to Figs 1a and 1b, and secondly to Figs 4a and 4b showing the basic design of the floor panels from below and from above, respectively.

From the joint edge 3 of the strip panel 1, i.e. the one long side, projects horizontally a flat strip 6 mounted at the factory on the underside of the strip panel 1 and extending throughout the entire joint edge 3. The strip 6, which is made of flexible, resilient sheet aluminium, can be fixed mechanically, by means of glue or in any other suitable way. In Figs 1a and 1b, the strip 6 is glued, while in Figs 4a and 4b it is mounted by means of a mechanical connection, which will be described in more detail hereinbelow.

Other strip materials can be used, such as sheets of other metals, as well as aluminium or plastics sections. Alternatively, the strip 6 may be integrally formed with the strip panel 1. At any rate, the strip 6 should be integrated with the strip panel 1, i.e. it should not be mounted on the strip panel 1 in connection with laying. As a non-restrictive example, the strip 6 may have a width of about 30 mm and a thickness of about 0.5 mm.

As appears from Figs 4a and 4b, a similar, although shorter strip 6' is provided also at one short side 3' of the strip panel 1. The shorter strip 6' does however not extend throughout the entire short side 3' but is otherwise identical with the strip 6 and, therefore, is not described in more detail here.

The edge of the strip 6 facing away from the joint edge 3 is formed with a locking element 8 extended throughout the entire strip 6. The locking element 8 has a locking surface 10 facing the joint edge 3 and having a height of e.g. 0.5 mm. The locking element 8 is so designed that when the floor is being laid and the strip panel 2 of Fig. 1a is pressed with its joint edge 4 against the joint edge 3 of the strip panel 1 and is angled down against the subfloor 12 according to Fig. 1b, it enters a locking groove 14 formed in the underside 16 of the groove panel 2 and extending parallel to and spaced from the joint edge 4. In Fig. 1b, the locking element 8 and the locking groove 14 together form a mechanical connection locking the panels 1, 2 to each other in the direction designated D2. More specifically, the locking surface 10 of the locking element 8 serves as a stop with respect to the surface of the locking groove 14 closest to the joint edge 4.

groove 14 without coming into contact with it.

Figs 3a-3b show another joining method for mechanically joining together the floor panels of Figs 2a-c. The method illustrated in Figs 3a-c relies on the fact that the strip 6 is resilient and is especially useful for joining together the short sides of floor panels which have already been joined along one long side as illustrated in Figs 2a-c. The method of Figs 3a-c is performed by first placing the two panels 1 and 2 flat on the subfloor 12 and then moving them horizontally towards each other according to Fig. 3b. The inclined portion 36 of the locking element 8 then serves as a guide surface which guides the joint edge 4 of the groove panel 2 up on to the upper side 22 of the strip 6. The strip 6 will then be urged downwards while the locking element 8 is sliding on the equalising surface 42. When the joint edges 3, 4 have been brought into complete engagement with each other horizontally, the locking element 8 will snap into the locking groove 14 (Fig. 3c), thereby providing the same locking as in Fig. 2c. The same locking method can also be used by placing, in the initial position, the joint edge 4 of the groove panel with the equalising groove 42 on the locking element 10 (Fig. 3a). The inclined portion 36 of the locking element 10 then is not operative. This technique thus makes it possible to lock the floor panels mechanically in all directions, and by repeating the laying operations the whole floor can be laid without using any glue.

The invention is not restricted to the preferred embodiments described above and illustrated in the drawings, but several variants and modifications thereof are conceivable within the scope of the appended claims. The strip 6 can be divided into small sections covering the major part of the joint length. Further, the thickness of the strip 6 may vary throughout its width. All strips, locking grooves, locking elements and recesses are so dimensioned as to enable laying the floor panels with flat top sides in a manner to rest on the strip 6 in the joint. If the floor panels consist of compact laminate and if silicone or any other sealing compound, a rubber strip or any other sealing device is applied prior to laying between the flat projecting part of the strip 6 and the groove panel 2 and/or in the recess 26, a moisture-proof floor is obtained.

As appears from Fig. 6, an underlay 46, e.g. of floor board, foam or felt, can be mounted on the underside of the panels during the manufacture thereof. In one embodiment, the underlay 46 covers the strip 6 up to the locking element 8, such that the joint between the underlays 46 becomes offset in relation to the joint between the joint edges 3 and 4.

In the embodiment of Fig. 5, the strip 6 and its locking element 8 are integrally formed with the strip panel 1, the projecting part of the strip 6 thus forming an extension of the lower part of the joint edge 3. The locking function is the same as in the embodiments described above. On the underside 18 of the strip panel 1, there is provided a separate strip, band or the like 74 extend-

ing throughout the entire length of the joint and having, in this embodiment, a width covering approximately the same surface as the separate strip 6 of the previous embodiments. The strip 74 can be provided directly on the rear side 18 or in a recess formed therein (not shown), so that the distance from the front side 21, 26 of the floor to the rear side 76, including the thickness of the strip 74, always is at least equal to the corresponding distance in the panel having the greatest thickness tolerance. The panels 1, 2 will then rest, in the joint, on the strip 74 or only on the undersides 18, 16 of the panels, if these sides are made plane.

When using a material which does not permit downward bending of the strip 6 or the locking element 8, laying can be performed in the way shown in Fig. 5. A floor panel 2a is moved angled upwardly with its long side 4a into engagement with the long side 3 of a previously laid floor panel 1 while at the same time a third floor panel 2b is moved with its short side 4b' into engagement with the short side 3a' of the upwardly-angled floor panel 2a and is fastened by angling the panel 2b downwards. The panel 2b is then pushed along the short side 3a' of the upwardly-angled floor panel 2a until its long side 4b encounters the long side 3 of the initially-laid panel 1. The two upwardly-angled panels 2a and 2b are therefore angled down on to the subfloor 12 so as to bring about locking.

By a reverse procedure the panels can be taken up in the reverse order of laying without causing any damage to the joint, and be laid again.

Several variants of preferred laying methods are conceivable. For example, the strip panel can be inserted under the groove panel, thus enabling the laying of panels in all four directions with respect to the initial position.

Claims

1. A system for providing a joint along adjacent joint edges (3, 4) of two building panels (1, 2), especially floor panels, in which joint:

the adjacent joint edges (3, 4) together form a first mechanical connection locking the joint edges (3, 4) to each other in a first direction (D1) at right angles to the principal plane of the panels (1, 2), and

a locking device (6, 8, 14) arranged on the rear side (18, 16) of the panels (1, 2) forms a second mechanical connection locking the panels (1, 2) to each other in a second direction (D2) parallel to the principal plane and at right angles to the joint edges (3, 4), said locking device (6, 8, 14) comprising a locking groove (14) which extends parallel to and spaced from the joint edge (4) of one (2) of said panels, termed groove panel, and which is open at the rear side (16)

14. A system as claimed in any one of claims 1-4, **characterised** in that the strip (6) is integrally formed with the strip panel (1), i.e. made in one piece with the strip panel (1).
15. A system as claimed in any one of the preceding claims, **characterised** in that the locking element (8) consists of a locking edge extended continuously along the strip (6).
16. A system as claimed in any one of claims 1-14, **characterised** in that the locking element (8) consists of a plurality of spaced-apart locking elements distributed throughout the length of the strip (6).
17. A system as claimed in any one of the preceding claims, **characterised** in that the panels (1, 2) are rectangular and intended, at each of their four edges (3, 4, 3', 4'), to be joined to a similar panel by a first mechanical connection of the aforementioned type and a second mechanical connection of the aforementioned type, each panel having a first pair of opposite joint edges (3, 4), one of which is provided with a strip (6) of the aforementioned type and the other of which is provided with a locking groove (14) of the aforementioned type, and a second pair of opposite joint edges (3', 4'), one of which is provided with a strip (6') of the aforementioned type and the other of which is provided with a locking groove (14') of the aforementioned type.
18. A system as claimed in any one of the preceding claims, **characterised** in that an underlay (46) of floor boards, foam, felt or the like is fixed to the rear sides (18, 16) of the panels.
19. A system as claimed in claim 18, **characterised** in that the underlay (46) is fixed so as to cover the strip (6) in said second direction at least up to the locking element (8), such that a joint between the underlays (46) of the two adjacent panels is offset in said second direction relative to the joint edges (3, 4).
20. A system as claimed in any one of the preceding claims, **characterised** in that a sealing means, such as a sealing compound, a rubber strip or the like, is provided on the front side (22) of the strip between the locking element (8) and the joint edge (3) of the strip panel to seal against the groove panel (2).
21. A system as claimed in any one of the preceding claims, **characterised** in that the first mechanical connection as well as the second mechanical connection are such that they allow the locking element (8) to enter the locking groove (14) if the groove panel (2) is turned about its joint edge (4) angularly towards the strip (6) while holding the upper corner part of the joint edge (4) of the groove panel (2) in contact with the upper corner part of the joint edge (3) of the strip panel (1).
22. A system as claimed in any one of the preceding claims, **characterised** in that the first mechanical connection as well as the second mechanical connection are such that they allow the locking element (8) to leave the locking groove (14) if the groove panel (2) is turned about its joint edge (4) angularly away from the strip (6) while holding the upper corner part of the joint edge (4) of the groove panel (2) in contact with the upper corner part of the joint edge (3) of the strip panel (1).

Patentansprüche

1. Ein System zur Bereitstellung einer Verbindung entlang angrenzender Verbindungskanten (3, 4) zweier Gebäudeplatten (1, 2), insbesondere Bodenplatten, wobei bei der Verbindung:

zwei angrenzende Verbindungskanten (3, 4) zusammen eine erste, mechanische Verbindung bilden, die die Verbindungskanten (3, 4) aneinander in einer ersten Richtung (D1) unter rechten Winkeln zu der Hauptebene der Platten (1, 2) verriegelt, und

eine auf der Rückseite (18, 16) der Platten (1, 2) angeordnete Verriegelungseinrichtung (6, 8, 14) eine zweite mechanische Verbindung bildet, die die Platten (1, 2) miteinander in einer zweiten Richtung (D2) parallel zu der Hauptebene und unter rechten Winkeln zu den Verbindungskanten (3, 4) verriegelt, wobei die genannte Verriegelungseinrichtung (6, 8, 14) eine Verriegelungsnut (14) umfaßt, die sich parallel zu und von der Verbindungskante (4) einer (2) der genannten Platten, Nutenplatte genannt, beabstandet erstreckt und die auf der Rückseite (16) der Nutenplatte (2) offen ist, **dadurch gekennzeichnet,**

daß die Verriegelungseinrichtung (6, 8, 14) des weiteren einen Streifen (6) umfaßt, der mit der anderen (1) der genannten Platten, Streifenplatte genannt, integriert ist, wobei sich der genannte Streifen (6) im wesentlichen über die gesamte Länge der Verbindungskante (3) der Streifenplatte (1) erstreckt und mit einem Verriegelungselement (8) versehen ist, das von dem Streifen so hervorsteht, daß, wenn die Platten miteinander verbunden sind, der Streifen (6) auf der Rückseite der Nutenplatte (2) hervorsteht, wobei sein Verriegelungselement (8) in der Verriegelungsnut (14) der Nutenplatte

Ähnliches (60) umfaßt, die von dem Streifen (6) gebogen oder ausgestanzt sind und die gegen gegenüberliegende Innenseiten der Vertiefung (58) drücken.

12. Ein System, wie in irgendeinem der Ansprüche 5-11 beansprucht, **dadurch gekennzeichnet**, daß der Streifen (6) an der Streifenplatte (1) mittels eines Binders befestigt ist.

13. Ein System, wie in irgendeinem der Ansprüche 5-12 beansprucht, **dadurch gekennzeichnet**, daß der Streifen (6) aus einem flexiblen, vorzugsweise elastischen Material hergestellt ist, wie Aluminiumblech.

14. Ein System, wie in irgendeinem der Ansprüche 14 beansprucht, **dadurch gekennzeichnet**, daß der Streifen (6) einstückig mit der Streifenplatte (1) gebildet ist, d.h. als ein Stück mit der Streifenplatte (1) hergestellt ist.

15. Ein System, wie in irgendeinem der vorhergehenden Ansprüche beansprucht, **dadurch gekennzeichnet**, daß das Verriegelungselement (8) aus einer Verriegelungskante besteht, die sich fortlaufend entlang dem Streifen (6) erstreckt.

16. Ein System, wie in irgendeinem der Ansprüche 1-14 beansprucht, **dadurch gekennzeichnet**, daß das Verriegelungselement (8) aus einer Mehrzahl abwechselnder Verriegelungselemente besteht, die über die Länge des Streifens (6) verteilt sind.

17. Ein System, wie in irgendeinem der vorhergehenden Ansprüche beansprucht, **dadurch gekennzeichnet**, daß die Platten (1, 2) rechteckig sind und an jeder ihrer vier Kanten (3, 4, 3', 4') mit einer ähnlichen Platte durch eine erste, mechanische Verbindung der vorgenannten Art und eine zweite, mechanische Verbindung der vorgenannten Art verbunden werden sollen, wobei jede Platte ein erstes Paar gegenüberliegender Verbindungskanten (3, 4), von denen eine mit einem Streifen (6) der vorgenannten Art versehen ist und die andere mit einer Verriegelungsnut (14) der vorgenannten Art versehen ist, und ein zweites Paar gegenüberliegender Verbindungskanten (3', 4') aufweist, von denen eine mit einem Streifen (6') der vorgenannten Art versehen ist und die andere mit einer Verriegelungsnut (14') der vorgenannten Art versehen ist.

18. Ein System, wie in irgendeinem der vorhergehenden Ansprüche beansprucht, **dadurch gekennzeichnet**, daß eine Unterlage (46) aus Bodenbrettern, Schaumstoff, Filz oder Ähnlichem an den Rückseiten (18, 16) der Platten befestigt ist.

19. Ein System, wie in Anspruch 18 beansprucht, **dadurch gekennzeichnet**, daß die Unterlage (16) so befestigt ist, daß sie den Streifen (6) in der genannten zweiten Richtung wenigstens bis zu dem Verriegelungselement (8) überdeckt, so daß eine Verbindung zwischen den Unterlagen (46) zweier angrenzender Platten in der genannten zweiten Richtung in bezug auf die Verbindungskanten (3, 4) versetzt ist.

20. Ein System, wie in irgendeinem der vorhergehenden Ansprüche beansprucht, **dadurch gekennzeichnet**, daß eine Dichtungseinrichtung, wie eine Dichtmasse, ein Gummistreifen oder Ähnliches, auf der Vorderseite (22) des Streifens zwischen dem Verriegelungselement (8) und der Verbindungskante (3) der Streifenplatte vorgesehen ist, um gegenüber der Nutenplatte (2) abzudichten.

21. Ein System, wie in irgendeinem der vorhergehenden Ansprüche beansprucht, **dadurch gekennzeichnet**, daß die erste, mechanische Verbindung sowie die zweite, mechanische Verbindung derart sind, daß sie dem Verriegelungselement (8) erlauben, in die Verriegelungsnut (14) einzutreten, wenn die Nutenplatte (2) um ihre Verbindungskante (4) winkelmäßig in Richtung zu dem Streifen (6) herumgedreht wird, während der obere Eckteil der Verbindungskante (4) der Nutenplatte (2) mit dem oberen Eckteil der Verbindungskante (3) der Streifenplatte (1) in Berührung gehalten wird.

22. Ein System, wie in irgendeinem der vorhergehenden Ansprüche beansprucht, **dadurch gekennzeichnet**, daß die erste, mechanische Verbindung sowie die zweite, mechanische Verbindung derart sind, daß sie dem Verriegelungselement (8) erlauben, die Verriegelungsnut (14) zu verlassen, wenn die Nutenplatte (2) um ihre Verbindungskante (4) winkelmäßig von dem Streifen (6) fort herumgedreht wird, während der obere Eckteil der Verbindungskante (4) der Nutenplatte (2) mit dem oberen Eckteil der Verbindungskante (3) der Streifenplatte (1) in Berührung gehalten wird.

Revendications

1. Système de formation d'un joint le long de bords adjacents (3, 4) de joint de deux panneaux de construction (1, 2), notamment de panneaux de sol, le joint étant tel que :

les bords adjacents (3, 4) de joint forment ensemble une première connexion mécanique qui bloque les bords (3, 4) de joint l'un par rapport à l'autre dans une première direction (D1) qui est perpendiculaire au plan principal des

- saisie (52) délimité par deux cavités (24, 50) à la face arrière (18) du panneau à bande, et des languettes, des lèvres ou analogues (54, 56) qui sont courbées ou poinçonnées dans la bande (6) et qui exercent une pression contre les côtés externes opposés du bord de saisie (52).
11. Système selon la revendication 9, caractérisé en ce que la connexion mécanique entre la bande (6) et le panneau à bande (1) comporte une cavité (58) formée à la face arrière (18) du panneau à bande, et des languettes, lèvres ou analogues (60) qui sont courbées ou poinçonnées dans la bande (6) et qui exercent une pression contre les côtés internes opposés de la cavité (58).
12. Système selon l'une quelconque des revendications 5 à 11, caractérisé en ce que la bande (6) est fixée au panneau à bande (1) par un liant.
13. Système selon l'une quelconque des revendications 5 à 12, caractérisé en ce que la bande (6) est formée d'un matériau souple, de préférence élastique, tel qu'une feuille d'aluminium.
14. Système selon l'une quelconque des revendications 1 à 4, caractérisé en ce que la bande (6) est formée solidairement avec le panneau à bande (1), c'est-à-dire en une seule pièce avec le panneau à bande (1).
15. Système selon l'une quelconque des revendications précédentes, caractérisé en ce que l'élément de blocage (8) est constitué d'un bord de blocage qui s'étend de façon continue le long de la bande (5).
16. Système selon l'une quelconque des revendications 1 à 14, caractérisé en ce que l'élément de blocage (8) est constitué de plusieurs éléments espacés de blocage répartis sur toute la longueur de la bande (6).
17. Système selon l'une quelconque des revendications précédentes, caractérisé en ce que les panneaux (1, 2) sont rectangulaires et sont destinés, à chacun de leurs quatre bords (3, 4, 3', 4'), à être raccordés à un panneau analogue par une première connexion mécanique du type précité et une seconde connexion mécanique du type précité, chaque panneau ayant une première paire de bords opposés de joint (3, 4) dont l'un a une bande (6) du type précité et l'autre a une gorge de blocage (14) du type précité, et une seconde paire de bords opposés de joint (3', 4') dont l'un a une bande (6') du type précité et l'autre a une gorge de blocage (14') du type précité.
18. Système selon l'une quelconque des revendications précédentes, caractérisé en ce qu'une sous-couche (46) de panneaux de sol, de mousse, de feutre ou analogue est fixée aux faces arrière (18, 16) des panneaux.
19. Système selon la revendication 18, caractérisé en ce que la sous-couche (46) est fixée afin qu'elle couvre la bande (6) dans la seconde direction au moins jusqu'à l'élément de blocage (8), si bien qu'un joint formé entre les sous-couches (46) des deux panneaux adjacents est décalé dans la seconde direction par rapport aux bords de joint (3, 4).
20. Système selon l'une quelconque des revendications précédentes, caractérisé en ce qu'un dispositif d'étanchéité, tel qu'une composition d'étanchéité, une bande de caoutchouc ou analogue, est placée à la face avant (22) de la bande entre l'élément de blocage (8) et le bord de joint (3) du panneau à bande afin que l'étanchéité soit assurée contre le panneau à gorge (2).
21. Système selon l'une quelconque des revendications précédentes, caractérisé en ce que la première connexion mécanique et la seconde connexion mécanique sont telles qu'elles permettent à l'élément de blocage (8) de pénétrer dans la gorge de blocage (14) lorsque le panneau à gorge (2) est tourné angulairement autour de son bord de joint (4) vers la bande (6) avec retenue de la partie supérieure de coin du bord de joint (4) du panneau à gorge (2) au contact de la partie supérieure de coin du bord de joint (3) du panneau à bande (1).
22. Système selon l'une quelconque des revendications précédentes, caractérisé en ce que la première connexion mécanique et la seconde connexion mécanique sont telles qu'elles permettent à l'élément de blocage (8) de quitter la gorge de blocage (14) lorsque le panneau à gorge (2) est tourné angulairement autour de son bord de joint (4) en s'écartant de la bande (6) avec retenue de la partie supérieure de coin du bord de joint (4) du panneau à gorge (2) au contact de la partie supérieure de coin du bord de joint (3) du panneau à bande (1).

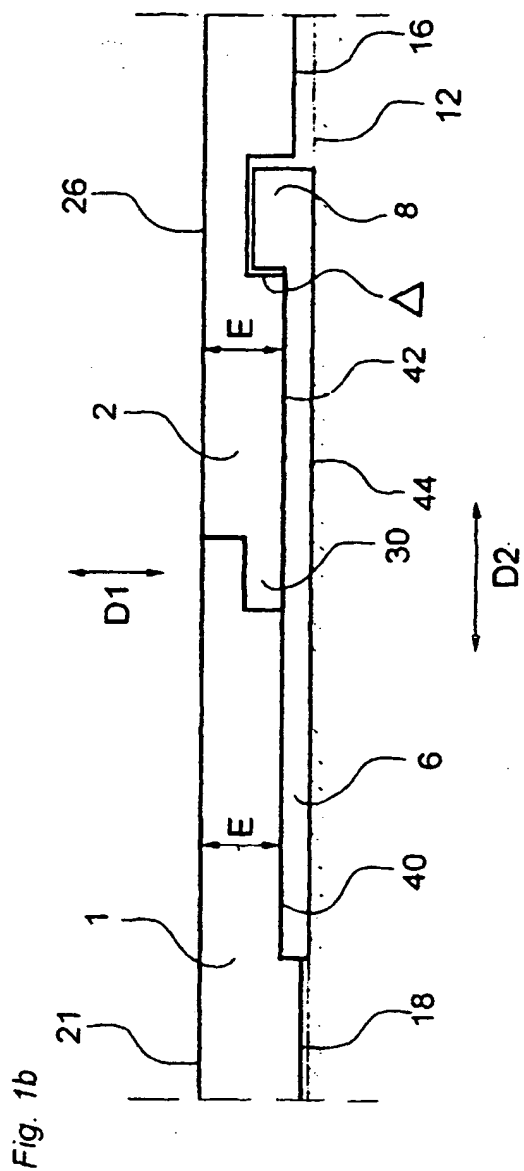
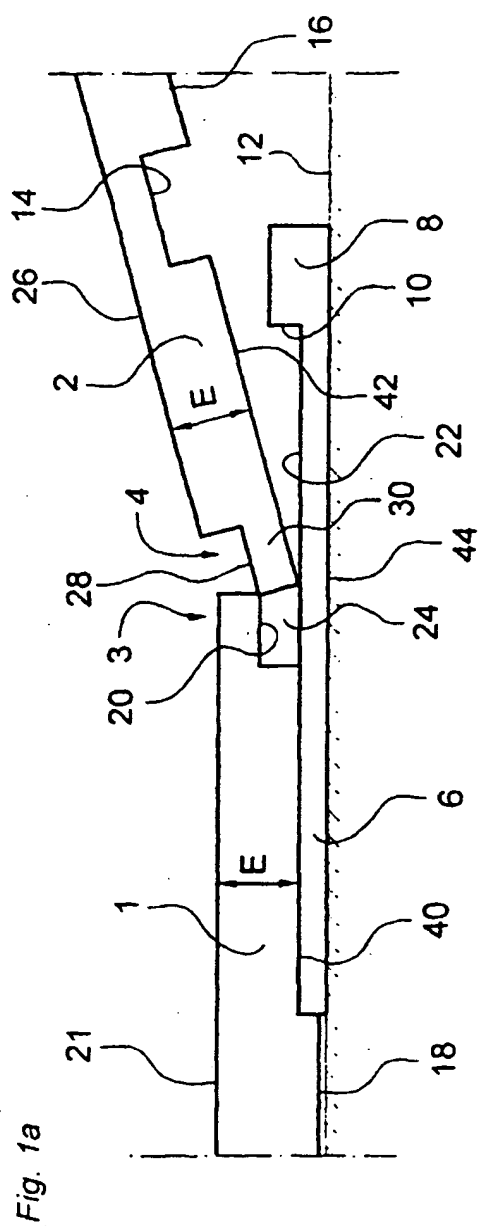


Fig. 2a

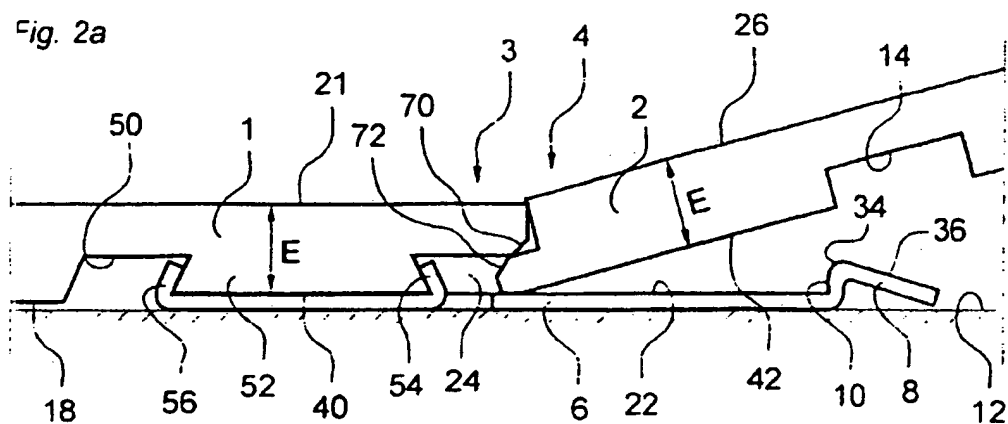


Fig. 2b

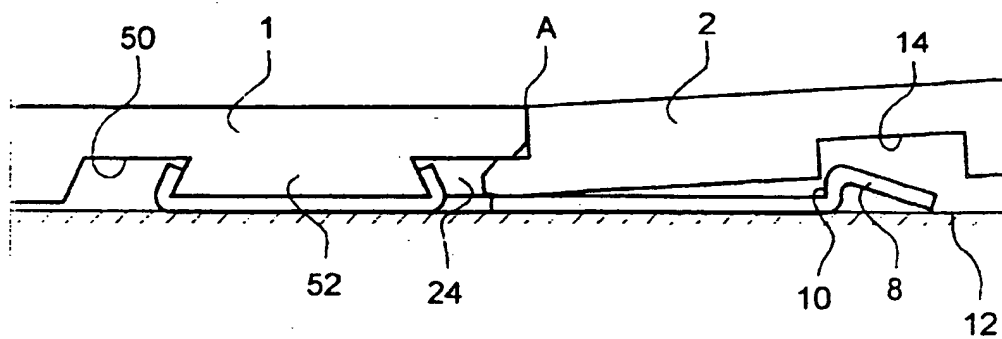


Fig. 2c

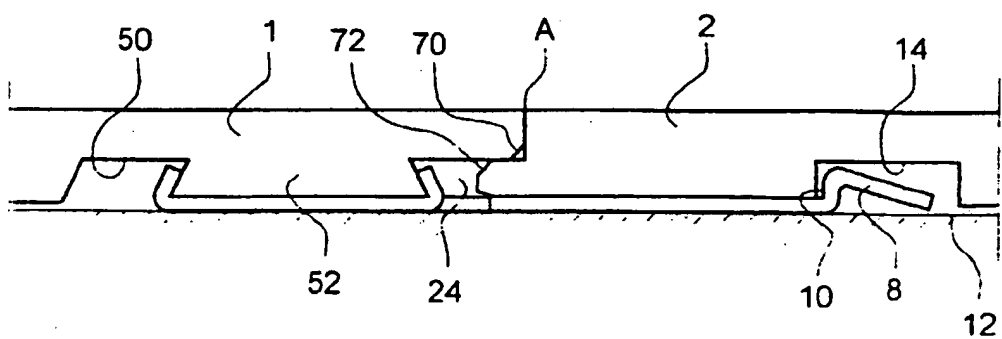


Fig. 3a

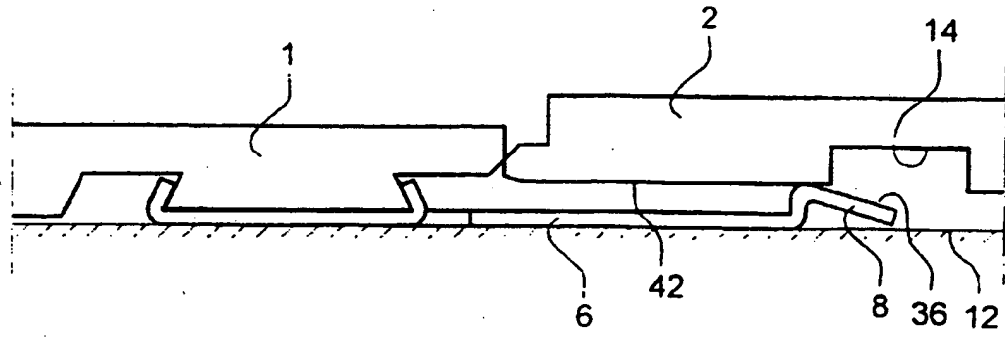


Fig. 3b

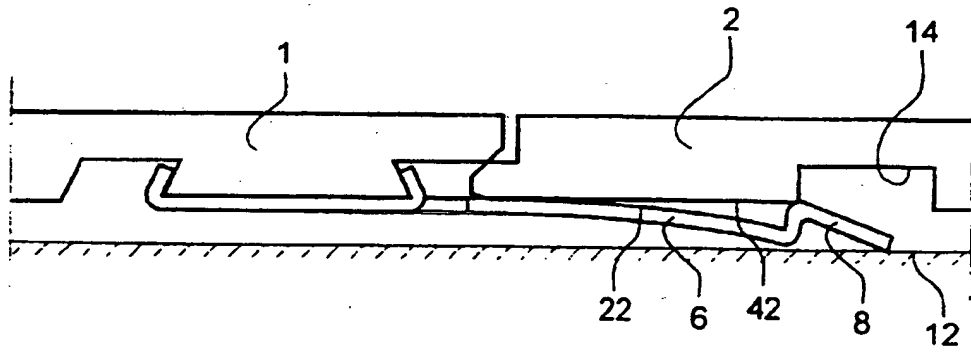


Fig. 3c

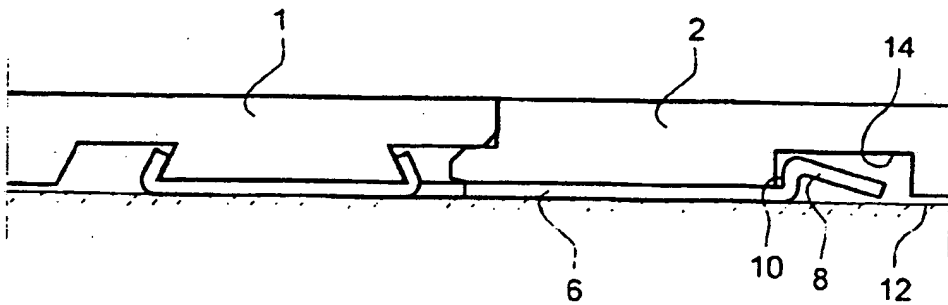


Fig. 4a

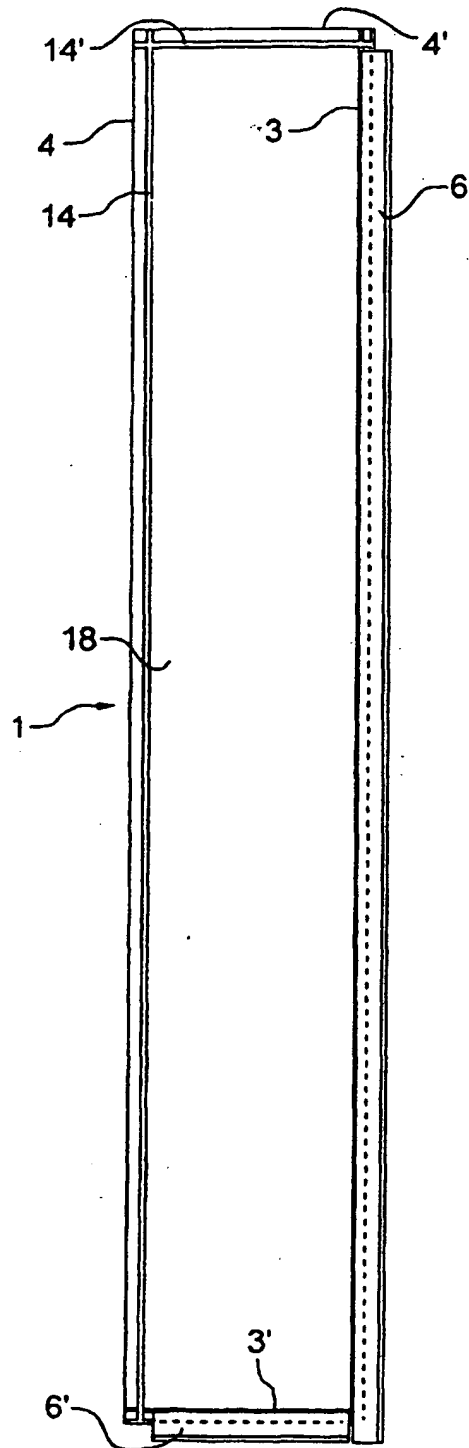


Fig. 4b

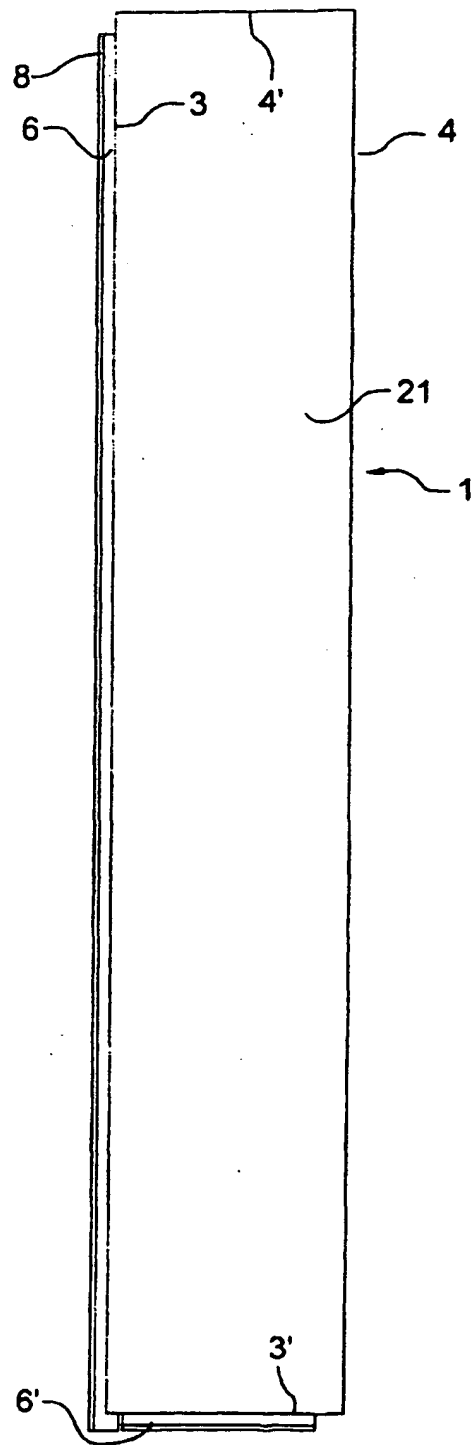


Fig. 5

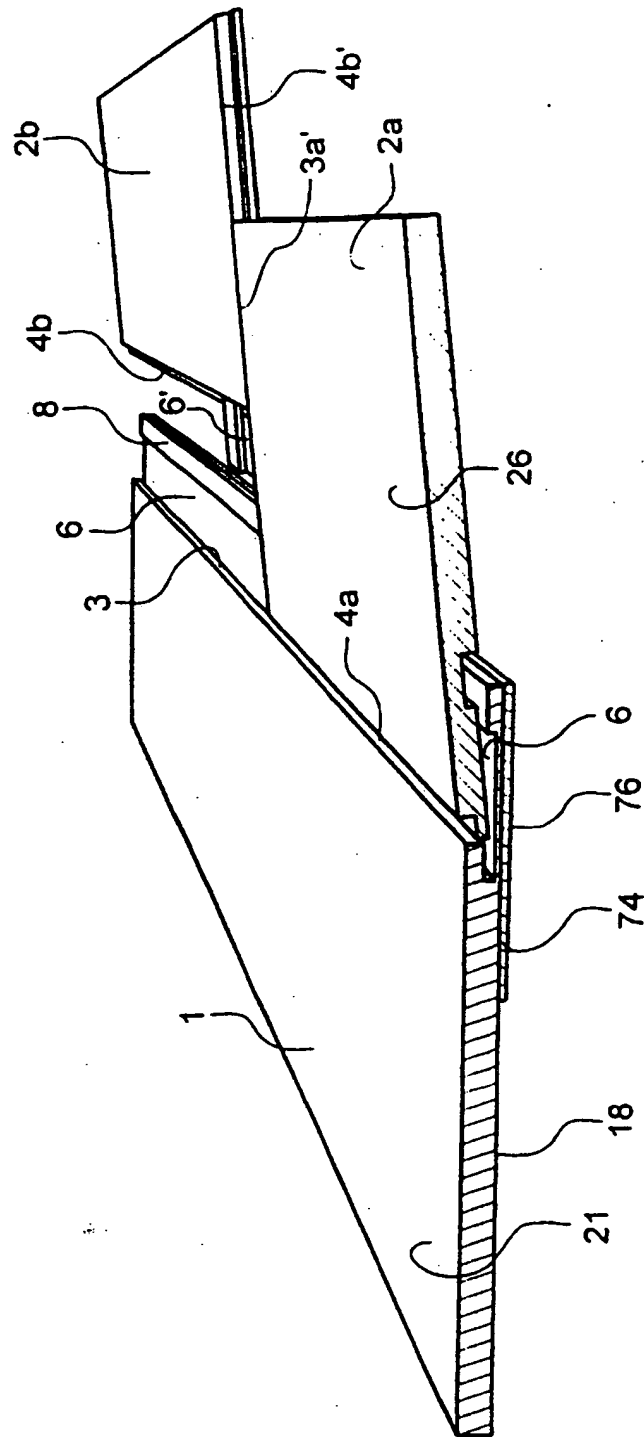


Fig. 6

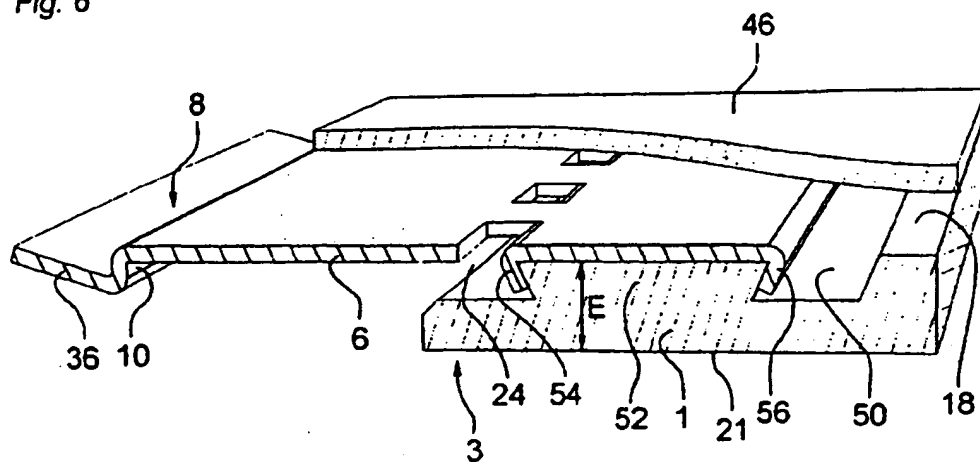


Fig. 7

